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ABSTRACT

To assess the context in which information is presented to readers and to know what demands information being presented makes of an audience, IBM designed three procedures to help gather such material. First, customer sites are visited to interview representatives from the intended audience and see the environments in which the information will be used. Second, task analyses for new products and functions are performed before a single word is written. Third, interim drafts of manuals are tested on subjects who are similar to the target audience. This last procedure should incorporate a usability edit, not at the end of the writing effort but throughout the writing cycle. In usability edits and tests in the IBM Human Factors Laboratory, volunteer subjects are presented with a task, the written material, and the system. Subjects are left alone but are watched from behind a one-way glass as they verbalize their way through the process. Results have shown that subjects experienced gaps and ambiguities even though the written material had gone through numerous technical reviews. Readability, then, is not only an attribute of the text but also a function of the interaction between reader and text. Usability edits may eliminate confusion and ambiguity in texts. (DF)

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The Usability Edit: A New Level

Candace Soderston

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The Usability Edit: A New Level

Candace Soderston

Discourse...is characterized by individuals acting in a special time and place;...it has a situational context and cultural context...there is a stress on the whole, not just the isolated linguistic part.--Kinneavy[1]

OUR CONVENTIONAL EDITING METHODOLOGY *has made it difficult for writers and reviewers to assess the whole, the situational context, the "individuals acting in a special time and place." The author proposes and describes a new editorial procedure to solve the problem.*

Information is comprehensive if it answers all of the reader's implicit questions. Information is well organized if the reader can rely on the framework provided by the writer. On the other hand, information is flawed if the reader has to enlarge upon or reduce the framework provided by the writer.

About the Author . . .

CANDACE SODERSTON *is a Senior Associate Information Developer (technical writer) at IBM in Kingston, New York. In addition to her work with IBM, Candace is pursuing her Ph.D. degree in the Communication Theory and Research track at the Rensselaer Polytechnic Institute. She earned her bachelor's degree from the University of New Mexico and holds an M.S. degree in Communication from RPI. In her work assignments, Candace includes task analyses and usability edits to ensure the final quality of information. She presented papers on graphics research and task analysis at the 1983 and 1984 ITCCs, respectively.*

The typical reaction to poorly designed material is to reject and avoid it rather than to investigate the information provided. Worse yet, it takes only a few of these experiences to condition an intelligent reader to dread and avoid material that appears to be similar. Aristotle would tell us that, given this situation, we as writers have damaged the ethos projected by our material, have damaged the audience's perception of our credibility, and have thereby lost their trust in our information.

How then can we assess the situational context, the individuals acting in a time and place, the framework for our information? Richard Larson would tell us that a writer's capacity to adjust to an audience depends upon the ability to internalize that audience.[2] We must know what knowledge our audience brings to a task so that we can fit our new information into the existing frameworks. We must know what our audience's expectations are so that we can fulfill them. And, finally, we must know what demands our information makes of our audience in order to ensure that the demands are reasonable.

THE IBM APPROACH

In Kingston, we have instituted three procedures to help us gather this information:

1. We visit customer sites to interview representatives from our audience and to see the environments in which they will use our information. (Lee Ridgway describes this process in "The Writer as Market Researcher" in this issue.)
2. We perform task analyses for new products and functions before writing a single word. (For papers on task analysis, see reference 3.)
3. We test interim drafts of manuals on subjects who are similar to our target audience (the topic of this article).

Traditionally, our interim drafts have been reviewed by subject matter experts, who look for technical inaccuracies, for gaps in information, and (when we find a four-star reviewer) for ambiguities. We could not operate without these subject matter experts, but, as we all know, we writers must create the bridge between the technology and the user. Technology does not exist in a vacuum or rest in an ivory tower (unless it fails in the market-

place). Rather, as Carolyn Miller says, "Applied science...is the extension of knowledge in order to solve some particular problem."[4] In other words, our writing is functional; it is aimed at producing certain actions; we mean for our audience to *use* our information in some way.

Carol German states that

> A reader-based strategy is an attempt to organize material in a way which simplifies the cognitive learning process for the reader.... Kuhn adds that rhetoric is the framework that explains why some bits of information are accepted while others are ignored.[5]

Granted that we are all idealistic and committed communicators, how can we know that we have simplified the learning demanded by our material and that the crucial bits of information have been duly noted?

Simply reading material is not the same thing as understanding and using it. Our audience is not cast in the role of passive receiver, but rather in the role of participant observer. Individuals have to *use* the information provided in order to perform a task. This point creates a problem when we realize that most of us have relied solely on the comments of technical and editorial *readers* to revise and improve our information. Readers are not users. What I am proposing is that we perform a new type of edit, a *usability edit*, for our most critical information.

A NEW TYPE OF EDIT

The most extensive work on editing that I have encountered was written by Robert Van Buren and Mary Fran Buehler, the authors of *Levels of Edit*. They identify nine types of edit, covering such diverse tasks as a policy edit (checking for adherence to house style guidelines and for legal implications), a format edit (marking copy to note typographical choices and layout instructions), and a substantive edit (checking for coherence, gaps, redundancies).

The nine *types* of edit are cells in a hierarchy of edit *levels* (Table 1). The most comprehensive level of edit, level 1, includes all of the nine types of edit. For example, at the Jet Propulsion

Table 1—The new "levels of edit"

Type of edit	Level of edit					
	0	1	2	3	4	5
Coordination	X	X	X	X	X	X
Policy	X	X	X	X	X	X
Integrity	X	X	X	X	X	
Screening	X	X	X	X	X	
Copy Clarification	X	X	X	X		
Format	X	X	X	X		
Mechanical Style	X	X	X			
Language	X	X	X			
Substantive	X	X				
[illegible]	X					

Laboratory, a Class A publication would rate a level 1 edit. As we descend through the hierarchy, each level includes fewer and fewer types of edit until, finally, level 5 includes only a coordination and a policy edit. These levels of edit, then, relate to the desired quality of the publication and to the funding, time, and resources allocated to the project. As the authors say,

> The levels-of-edit concept makes it possible to back away from the full treatment in an orderly fashion, so that a publication will still receive the highest level of edit consistent with the time and money constraints imposed upon it.[6]

I propose that a *usability* edit be added to complete this comprehensive list. This tenth type of edit would help make up a new level of edit (level 0), which should be performed on our most critical documents.

The usability edit could also be termed a usability test, but I want to emphasize its value as an aid to revision. When readers perform a traditional edit, they read the material and flag problems, be they formatting problems, grammatical problems, or technical problems. The editor either suggests solutions or leaves it to the writer to fix the flagged problems. In the same way, when readers perform a usability edit, they flag usability problems in the material. Anytime a reader, subject, or "usability editor" encounters a problem in performing the task, the writer should see a problem in the material. These problems can then be corrected.

The crucial point about this usability edit is that it is not something that is done only once, at the end of the writing project. It could also be used in this way, of course, as a *usability test* for collecting data about error rates and time to complete tasks. This information could be used for comparisons between different books in the library or between different releases of a product. If the literature for this year's model is "more usable" than last year's model, we have quantitative proof of the value added to the documentation by the writer. However, the aspect of usability edits that I want to emphasize is that they give us a way of *ensuring* quality, not only a way of measuring quality after the fact.

EDITING TO ENSURE QUALITY

Most current theories view composing as a cyclical, recursive process as opposed to one that is linear. We do not see discrete stages of planning, writing, and revising in composing; instead, we see overlapping processes. Writers seem to go through these stages cyclically. Richard E. Young says that

> The process can be viewed as moving generally from conceptual problems to editing problems but moving cyclically, the writer shifting his focus of attention repeatedly among matters of content, style, and structure during each cycle.[7]

For this reason the usability edit should not come at the end of the writing effort, solely to polish the surface structure of the document. Rather, in line with what we know about writing, it should be used iteratively throughout the writing cycle. In other words, this type of edit comes earlier than most of the other edits and should be repeated as the draft takes shape.

What makes this so valuable is that the mental processes that we go through when reading and understanding information are not directly revealed to us in the surface structure of language. Thus the traditional types of edit are not sufficient for ensuring the quality and usability of written material. To see where people have trouble in comprehending information, we must watch and listen to them in the process of *using* the material.

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The Procedure

In our usability edits and usability tests in the Human Factors Laboratory here in Kingston, we present our subjects with the task for the day, our written material, and the system. We then leave the room so that our presence does not interfere with their processes. While they proceed through the task, verbalizing their thoughts, we watch from behind one-way glass. There is a microphone in the test room, so we can hear everything that the subject says. Besides seeing the subject through the glass, we also have a telescreen monitor aimed at the display screen of the system, so that we can see whatever the subject types on the screen. (We also have the option of recording on videotape both the subject and the display screen.)

All of our test subjects are volunteers who somehow have hearts of gold and full commitments to quality. Although we make it clear that the information and system are on trial, not the test subject, it is still a trying experience for people to try to understand difficult material under this amount of scrutiny. We try to moderate the tension by providing them with a help phone and telling them they can take breaks whenever they desire.

For a technical writer used to operating with little immediate feedback from the field, watching and listening to the test subjects can be one of the most interesting and exciting parts of a writing project. In my own experience, the gaps and ambiguities that my test subjects revealed were totally unexpected, because the material had already gone through many technical reviews.

The Theory

The reason for the gaps is not that the technical reviews were inadequate (although this could also be a problem). Psycholinguists have studied the cognition process extensively and agree that syntax alone does not determine when inferences will or need be made. Each of us brings to the reading task a background, a framework of knowledge. Some frameworks will be full and others will contain gaps.

If I bring to the reading situation a full background on the subject at hand, I will not have to make very many inferences in my reading task. That is, my long-term memory searches will enable me to find an existing framework for almost every piece of information in my reading. Therefore, I may not notice an ambiguity that a reader with less knowledge on the subject will notice. However, a less informed reader, after searching long-term memory and finding no existing point of reference, will have to juggle several alternative interpretations and, after making one choice (perhaps not the correct one), generate the bridging inferences with which to attach the information in the knowledge framework.

In view of this process of cognition, Harris and Monaco define readability as the number of long-term memory searches plus the number of inferences required in order to comprehend the material.[8] In other words, readability (or usability) is a function of the interaction between the text and reader, rather than being solely an attribute of the text. For this reason it is important to perform an edit that represents this interaction, as well as performing edits that deal solely with the text.

CONCLUSION

We in Kingston are well on our way to making this a regular part of our information development process. Besides having editors for each library, we now have a new department devoted solely to usability testing of drafts throughout the documentation cycle. Harkening back to Kinneavy, we now look at the situational context; we assess the whole and not just the isolated linguistic part. The information that we have gleaned from this process has convinced us of the value of adding the usability edit to our mode of operation. Ω

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Recently Spotted

One major company's report to stockholders explained a third-quarter financial loss as "negative investment increment."

The White House "crisis-management team" was replaced by the "special-situation group," which is made up of the same officials but renamed to avoid alarming the public each time it meets.

A package of cheese was labeled "portion-controlled," meaning "sliced."

The armed forces, fearing the semblance of sexism, dropped the term "bachelor housing" in favor of "unaccompanied-personnel housing."

Pat Cooke

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